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On the nature of the T_{cc}^{+} state

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The data on the charged tetraquark state T_{cc}^{+} recently discovered by the LHCb Collaboration are analysed in a coupled-channel scheme with the three-body effects included. The finite width of the D^* meson and the one-pion exchange between the D and D^* mesons are taken into account simultaneously and a high-quality fit is built to the line shape in the $DD\pi$ channel. It is argued that the data are consistent with the T_{cc}^{+} being a hadronic molecule generated by the interactions in the $D^{*+}D^0$ and $D^{*0}D^+$ channels. The low-energy constants of the amplitude are extracted from the fit and the properties of the T_{cc}^{+} spin partner state residing near the D^*D^* threshold are discussed. Based on Phys.Rev.D 105 (2022) 014024 and Phys.Lett.B 833 (2022) 137290.

Category

talk

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